7. With arterial pulsation lateral pressure is exerted on the intracranial veins, leading to an increased flow of blood from the skull.

8. These movements of the veins, with respiratory movements and with arterial pulsation, will occur in the large veins leading into the intracranial venous sinuses, the walls of which are themselves incompressible.

9. Similar movements of alternating compression and dilatation of the arteries and veins probably occur also in the spinal column, the cavity of which is to be looked on as being practically closed, just as the cranial cavity is.

10. In all cases of sudden increase of pressure affecting both cranial and spinal cavities there will practically be no variation in the quantity of blood present in the cavities. There will only be either (a) a variation in the amount of blood in one side of the circulation as compared with the other, arterial at the expense of venous, or vice versa, or (b) an alteration in the rate of flow through the capillaries. In rises of pressure lasting some time there may be alteration of the quantity of blood inside the cavities, resulting from alteration in the rate of secretion or of absorption of cerebro-spinal fluid.

11. The point of importance in alterations of pressure inside the skull is the rate of flow through the capillaries. Steady flow through the capillaries—"adiæmorrhysis," as it has been called by Geigel—may go on under very low intracranial pressure or under comparatively high. (Hill.)

12. Increased intracranial pressure from an effusion into the cranium—for example, a hemorrhage—leads first of all to flow of cerebro-spinal fluid from the cranial to the spinal cavity, so giving a respite for a certain length of time to the intracranial circulation. If the effusion goes on there is, first, compression of the larger veins, which leads, after it has taken place to a certain extent, to interference with the flow of blood through the capillaries—adiæmorrhysis—and, if the pressure still rises, to actual compression of the capillaries and true anæmia of the brain.

13. When tracings are taken of the pulsations of the brain, with rise of pressure two forms of pulse wave may be seen: (1) Where wave is less ample and still anacrotic, as it is under normal conditions; (2) where wave is higher and tends to become katacrotic. The former occurs much more frequently than the latter, and seems to be present in what may be termed "passive" increase of intracranial pressure, that is, where the intracranial pressure is increased from alteration of the circulation in the rest of the body.

14. In some conditions the intracranial circulation seems to vary independently of the circulation elsewhere. This would tend to show that, although the blood vessels of the brain are not directly controlled from the general vasomotor centre, there must be some local mechanism for altering their calibre. PATRICK.

196. I REFLESSI VASCOLARE NELLE MEMBRA E NEL CERVELLO DELL' HUOMO PER VARIE STIMOLI E PER VARIE CONDIZIONI FISIOLOGICHE E SPRRIMENTALI (The Vascular Reflexes of the Meninges and Brain of Man due to Various Stimuli and Various Physiological and Experimental Conditions). M. L. Patrizi (Revista Sperimentali di Freniatris, 23, 1897).

In an extended article of over eighty pages, copiously illustrated with diagrams and pulse tracings, the author presents a most elaborate and careful study, historical as well as experimental. The conclusions reached by the author are: (1) The reflexes of the blood vessels in man follow the fundamental principles of localization and extension observed for other reflexes. (2) The localized vascular reflex is more direct than the radiated vascular reflex. (3) The influence of the cerebrum over the spinal centres is manifest in the matter of the vascular reflexes. (4) The time for the vessel reflex for sensitive stimuli is 3 seconds for the arm and 5 seconds for the leg. (5) The reflex for the cerebral vessels for sensory stimulation has a latency not less than the arm reflex for the same stimulus. (6) During sleep vessel reflex action is retarded, diminishing from the centre toward the periphery, and not appreciable in the lower leg. (7) During sleep the movements of the blood in the brain, following stimuli, are probably active and self-regulating reflexes. (8) In the limbs the vascular reflex for sensorial stimuli and for psychic stimuli requires about 4 seconds longer than reflexes for sensitive stimuli. (9) Each sense stimulated gives its own vascular reaction. (10) Some sensorial stimuli provoke vaso-motor reactions with greater force than others.

JELLIFFE.

PATHOLOGY.

197. AZIONE DELLA TOSSINA DIPTERICA SUL SISTEMA NERVOSA. CONTRIBUTO ALLA PATOGENESI DELLA PARALYSI DIPTERICA (Action of the Diphtheria Toxin on the Nervous System). Ezio Luisada e Dante Pacchioni, Torino (Giornale della R. Accademia di Medicina di Torino, 61, 1898, p. 77).

These investigations, under the direction of Prof. G. Neya, sought the vulnerability of the nervous tissues to the diphtheric toxines, and injected the toxic material in (1) the cerebral cortex, in the Rolandic area; (2) in the vertebral cavity, near the medulla, and (3) in the sheath of the sciatic nerve. The animal experimented upon was the dog, 13 being under observation, and the effects of the diphtheric toxines obtained from Dr. Belfonti, of the Serotherapeutic Institute of Milan, were studied from a clinical and anatomo-pathological point of view. The results obtained by these investigations may be summarized as follows: 1. The diphtheric toxines, applied directly to the nervous system, provoke a profound lesion at the point of application, characterized anatomically by an inflammation and a degeneration.

2. These lesions are propagated more or less extensively from the point of application.

3. In the dogs not previously immunised by the anti-diphtheric serum, and which had been injected by a dose sufficiently toxic, the phenomena of local reaction and also those of a general intoxication were noted.

4. In immunised dogs the diphtheric toxines provoked constantly alterations of the central nervous system, intense, localised, but of less extent than those produced in dogs non-immunised.

5. The toxine applied directly to the medulla is propagated rapidly in all directions, preferring the posterior columns, the gray matter and the central canal as routes. In consequence of the bulbar invasion death occurred in the animals more rapidly when the toxines were introduced into the medulla than when applied to any other portion of the cerebro-spinal axis. When the toxines were introduced in the cerebral cortex, characteristic lesions of these regions were manifested. Death occurred later, through propagation of the poison to the medulla.

6. Toxines introduced into the sheath of the sciatic nerve provoked an inflammatory process more or less intense, but more circumscribed than in the central nervous system. From the nerve the